

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

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| Applicant's or agent's file reference FTE0502-PCT | FOR FURTHER ACTION | | See item 4 below |
| International application No. PCT/JP2005/002240 | International filing date (<i>day/month/year</i>) 15 February 2005 (15.02.2005) | Priority date (<i>day/month/year</i>) 24 February 2004 (24.02.2004) | |
| International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237 | | | |
| Applicant KABUSHIKI KAISHA TOSHIBA | | | |

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|-------------------------------------|--|---|-----------|---------------------|--------------------------|------------|----------|--------------------------|-------------|--|--------------------------|------------|----------------------------|-------------------------------------|-----------|---|-------------------------------------|------------|-------------------------|--------------------------|-------------|--|-------------------------------------|--------------|---|
| 1. | This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a). | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. | This REPORT consists of a total of 6 sheets, including this cover sheet. In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead. | | | | | | | | | | | | | | | | | | | | | | | | |
| 3. | <p>This report contains indications relating to the following items:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 10%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 20%;">Box No. I</td> <td style="width: 70%;">Basis of the report</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table> | <input checked="" type="checkbox"/> | Box No. I | Basis of the report | <input type="checkbox"/> | Box No. II | Priority | <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability | <input type="checkbox"/> | Box No. IV | Lack of unity of invention | <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement | <input checked="" type="checkbox"/> | Box No. VI | Certain documents cited | <input type="checkbox"/> | Box No. VII | Certain defects in the international application | <input checked="" type="checkbox"/> | Box No. VIII | Certain observations on the international application |
| <input checked="" type="checkbox"/> | Box No. I | Basis of the report | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. II | Priority | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. IV | Lack of unity of invention | | | | | | | | | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement | | | | | | | | | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> | Box No. VI | Certain documents cited | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. VII | Certain defects in the international application | | | | | | | | | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> | Box No. VIII | Certain observations on the international application | | | | | | | | | | | | | | | | | | | | | | | |
| 4. | The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2). | | | | | | | | | | | | | | | | | | | | | | | | |

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| <p style="text-align: center;">The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland</p> <p>Facsimile No. +41 22 338 82 70</p> | <p>Date of issuance of this report 19 September 2006 (19.09.2006)</p> <hr/> <p>Authorized officer <div style="text-align: center;">Yoshiko Kuwahara</div></p> <p>e-mail: pi07@wipo.int</p> |
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PATENT COOPERATION TREATY

TRANSLATION

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

Date of mailing
(day/month/year)

Applicant's or agent's file reference

FTE0502-PCT

FOR FURTHER ACTION

See paragraph 2. below

International application No.

PCT/JP2005/002240

International filing date (day/month/year)

15.02.2005

Priority date (day/month/year)

24.02.2004

International Patent Classification (IPC) or both national classification and IPC:

Applicant

KABUSHIKI KAISHA TOSHIBA

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☒ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/JP

Authorized officer

Facsimile No.

Telephone No.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2005/002240

Box No. 1

Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language:
_____, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/JP2005/002249

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|-------------------------------|--|-----|-----|
| Box No. V | Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability: citations and explanations supporting such statement | | |
| 1. Statement | | | |
| Novelty (N) | Claims | | YES |
| | Claims | 1-6 | NO |
| Inventive step (IS) | Claims | | YES |
| | Claims | 1-6 | NO |
| Industrial applicability (IA) | Claims | | YES |
| | Claims | 1-6 | NO |

2. Citations and explanations:

Document 1: JP 2003-342563 A (Konica Minolta Holdings Kabushiki Kaisha), 03 December 2003, full text, particularly comparative examples (Family: none)
Document 2: JP 2003-327961 A (Konica Minolta Holdings Kabushiki Kaisha), 19 November 2003, full text, particularly comparative examples (Family: none)
Document 3: JP 2003-197135 A (Hitachi, Ltd.), 11 July 2003, full text, particularly page 6, left column, lines 2-3 & US 2003/71560 A1

Explanation

Novelty

The comparative examples in documents 1, 2 disclose a manganese-activated zinc silicate phosphor having a particle size of 1.0-2.0 μ m. Based on a detailed explanation of the invention of the present application, it is found that an important element of a green light emitting phosphor excited by an electron beam accelerated at an acceleration voltage of 15kV or less is having an average particle size of 1.0-2.0 μ m, and because elements other than this are not understood to be essential, the phosphor disclosed in claims 1-6 of the present application cannot be distinguished from the phosphors shown in the comparative examples of documents 1, 2.

In addition, because documents 1, 2 disclose that a phosphor having a particle size of 1.0 μ m is desirable, this point is also identical to the invention of the present application.

Therefore, the invention disclosed in claims 1-6 of the present application is disclosed in documents 1 and 2, and does not appear to be novel.

Inventive Step

Because document 3 discloses that it is desirable for phosphors for FEDs to have a particle size of 0.8-1.4 μ m, using the green light emitting phosphors having a particle size of 1.0-1.4 μ m disclosed in documents 1 and 2 for this application could be easily conceived of by a party skilled in the art.

Therefore, the invention disclosed in claims 1-6 of the present application is obvious from the disclosures of documents 1-3, and does not appear to involve an inventive step.

Claims 1-6 appear to possess industrial applicability.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2005/002240

Box No. VI Certain documents cited

1. Certain published documents (Rule 43bis.1 and 70.10)

| Application No. Patent No. | Publication date (day/month/year) | Filing date (day/month/year) | Priority date (valid claim) (day/month/year) |
|-------------------------------|--------------------------------------|---------------------------------|---|
| JP 2004-71434 A [EX] | 04.03.2004 | 08.08.2002 | |
| JP 2004-63191 A [EX] | 26.02.2004 | 26.07.2002 | |
| JP 2004-63192 A [EX] | 26.02.2004 | 26.07.2002 | |

2. Non-written disclosures (Rule 43bis.1 and 70.9)

| Kind of non-written disclosure | Date of non-written disclosure (day/month/year) | Date of written disclosure referring to non-written disclosure (day/month/year) |
|--------------------------------|--|---|
|--------------------------------|--|---|

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

ECT/JP2005/002240

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

The manganese-activated zinc silicate phosphor disclosed in claims 1-6 is specified by the characteristic of "emitting a green light when excited by an electron beam accelerated at an acceleration voltage of 15kV or less" in the claims of the present application.

However, based on the disclosures in the specification, although it can be understood that an average particle size of 1.0-2.0 μ m is an important element when embodying this characteristic, regarding whether or not it is sufficient to indicate a characteristic with this point only, a theoretical explanation of this, or adequate experimental results that could be substituted for such an explanation, are not indicated in the specification of the present application.

Therefore, the specific mode (particle size, production method etc.) of the phosphor disclosed in these claims is not sufficiently disclosed at a level that could be understood by a party skilled in the art, except for the disclosures in the examples (PCT Article 5). In addition, for the same reasons, they are not adequately supported according to the stipulations of PCT Article 6.

Therefore, among manganese-activated zinc silicate phosphors, opinion is shown here based on the specific phosphor constituted by particles having an average particle size of 1.0-2.0 μ m shown in the examples.